Small Business Innovation Research/Small Business Tech Transfer

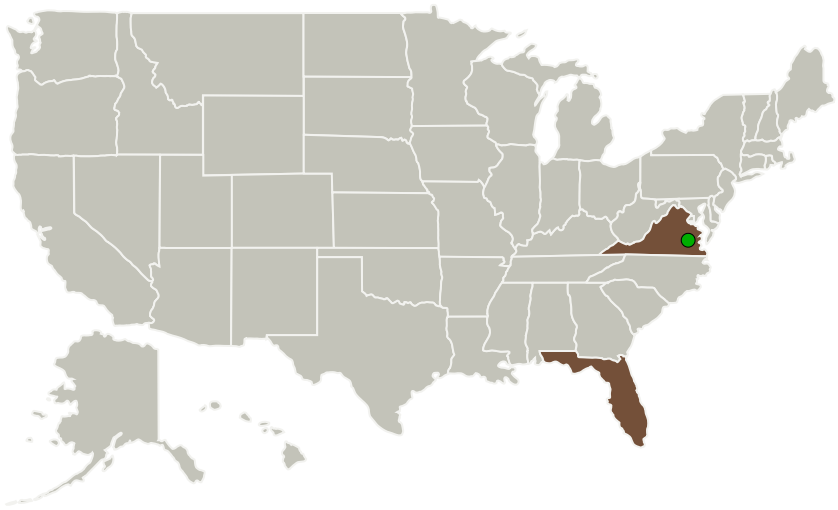
High Integrity GPS Solution for Trusted Automatic Dependent Surveillance - Broadcast (ADS-B), Phase I

Completed Technology Project (2017 - 2017)

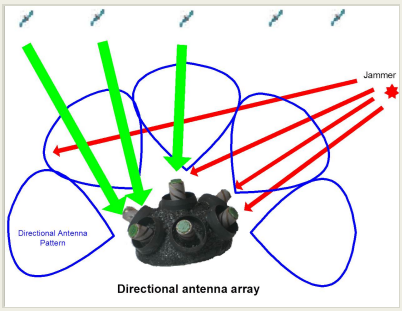
Project Introduction

Automatic Dependent Surveillance - Broadcast (ADS-B) is the most CSWaP compatible safety solution for Unmanned Aerial Systems (UAS) and will be mandated for use by the FAA in the National Airspace System (NAS) by 2020. The ongoing miniaturization efforts will continue to enable a cooperative approach to the integration of UAS into NAS moving forward. A critical limitation of ADS-B is the use of GPS-derived position vector in its broadcast, which can be easily spoofed or jammed, or confused by reflections in urban areas. We present a low-CSWaP solution to secure and verify the GPS integrity using a novel antenna design so that ADS-B can be used as a trusted vehicle to vehicle communications and navigation link for UAS.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
R Cubed Engineering, LLC	Lead Organization	Industry Women-Owned Small Business (WOSB)	Palmetto, Florida
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



High Integrity GPS Solution for Trusted Automatic Dependent Surveillance - Broadcast (ADS-B), Phase I Briefing Chart Image

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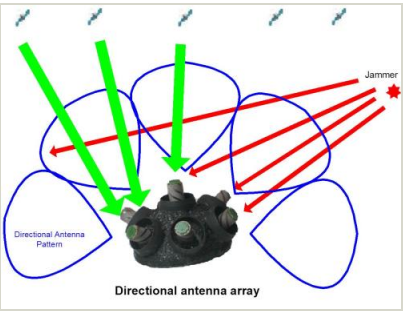
Primary U.S. Work Locations	
Florida	Virginia

Images



Briefing Chart Image
High Integrity GPS Solution for Trusted Automatic Dependent Surveillance - Broadcast (ADS-B), Phase I Briefing Chart Image *(https://techport.nasa.gov/image/130789)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
R Cubed Engineering, LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

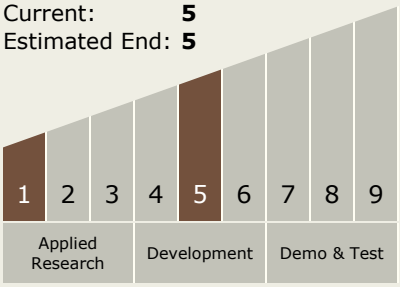
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Vincent M Contarino

Technology Maturity (TRL)

Start: **1**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.1 Safe All Vehicle Access

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System